

## MONITORING OF NATURAL RADIOACTIVITY IN MANGANESE ORE

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The natural radionuclides ( $^{238}\text{U}$ ,  $^{232}\text{Th}$ , and  $^{40}\text{K}$ ) contents of Manganese ore collected by Sinai Manganese Company in Egypt-Cairo have been determined by low background spectroscopy using hyper-pure germanium (HPGe) detector. The mean activities due to the three radionuclides ( $^{238}\text{U}$ ,  $^{232}\text{Th}$ , and  $^{40}\text{K}$ ) were found to be  $3543 \pm 106$ ,  $222 \pm 6.6$  and  $3483 \pm 104$  Bq/kg, respectively. The absorbed dose rates due to the natural radioactivity in samples under investigation ranged from  $1522 \pm 45$  to  $1796 \pm 53$  nGy/h. The radium equivalent activity varied from  $3807 \pm 114$  to  $4446 \pm 133$  Bq/kg. Also, the representative external hazard index values for the corresponding samples were estimated.

*Keywords:* radionuclides,  $^{238}\text{U}$ ,  $^{232}\text{Th}$ ,  $^{40}\text{K}$ , manganese ore, absorbed dose rates, radium equivalent activity, external hazard index.